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Mrs. Brenda Jones
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77 W. Jackson Blvd. SR-6J
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**Subject: Technical Memorandum
 Vacant Lot Site
 North Chicago, Lake County, Illinois
 Technical Direction Document No. S05-0302-017
 Tetra Tech Contract No. 68-W-00-129**

Dear Mrs. Jones:

T N & Associates, Inc. (TN&A), a subcontractor for the Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START), has prepared this technical memorandum under the U.S. Environmental Protection Agency (U.S. EPA) Technical Direction Document (TDD) No. S05-0302-017 to summarize removal assessment activities at the Vacant Lot site in North Chicago, Lake County, Illinois.

The removal assessment was performed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as documented in Title 40 of the *Code of Federal Regulations* (CFR), Section 300.415(b)(2), to evaluate site conditions and possible threats to human health, public welfare, and the environment.

In April 2000, Fansteel's consultant, Carlson Environmental, Inc. (CEI), installed test borings on the Vacant Lot site to delineate trichloroethene (TCE) groundwater plume boundaries of Fansteel site. U.S. EPA and START identified three soil boring locations, SB-1 through SB-3, in the northwest part of the site adjacent to Pettibone Creek in August 2003. Soil boring SB-2 was located adjacent to CEI's investigation test boring TB-24. Soil boring SB-2 was located by measuring 71-feet north of MW-6, located on the Fansteel site at the eastern property boundary of the Vacant Lot site, and then measuring 280-feet west to the boring location. Soil borings SB-1 and SB-3 were located 95-feet north and south, respectively, of soil boring SB-2.

U.S. EPA's Field Support Section (FSS) members operated a Bobcat® mounted Geoprobe® to install the three soil borings. Each soil boring was advanced to a depth of approximately 8-feet bgs. START chose the

Comment [COMMENT1]: Suggest adding the date these soil borings were made.

sampling depth of 0- to 8-feet bgs because previous investigations conducted by CEI indicated groundwater contamination at five feet bgs. Soil samples were collected from each soil boring using a 48-inch stainless steel macrocore (MC) sampling tube lined with cellulose acetate butyrate (CAB) sampling sleeve. Two soil samples from each soil boring were collected from depths of 0 to 4 and 4 to 8 feet bgs. Each 4-foot interval sample was divided into 2-foot sections and screened for VOCs using a TVA-1000 instrument. The section with the highest VOC reading was sampled for VOC analysis.

The seven soil samples were analyzed under the U.S. EPA Contract Laboratory Program (CLP) contract by CEIMIC laboratories located in Narragansett, Rhode Island, for VOCs and by Bonner laboratories located in Hattiesburg, Mississippi, for total metals. Analysis for total tantalum was performed by Great Lakes Analytical (GLA) in Buffalo Grove, Illinois, under analytical TDD No. S05-0308-005. Analytical parameters were chosen based on historical analytical data of the site. All soil samples collected at the site were analyzed for the following parameters using the U.S. EPA SW-846 Methods: total VOCs using methods 5030B and 8260B, total metals using methods 6010B, 7470A, and 7471A, and total tantalum using method 6010B. START reviewed analytical data and supporting QA/QC data provided by U.S. EPA CLP and GLA laboratories. Based on START QA/QC data validation, the data are acceptable for use as qualified. The analytical results of duplicate soil sample SB-2-1-D was comparable to results of the original soil sample SB-2-1.

TCE and tetrachloroethene were the most prevalent contaminants detected in site soil samples. Analytical results of soil samples indicated concentrations of TCE ranged from 7.1 to 1,100 mg/kg and tetrachloroethene ranged from 0.38 to 150 mg/kg. Analytical result for soil sample SB-1-1 indicated total lead of 861 mg/kg. The highest TCE concentration was detected in a soil sample at a depth of 4-8 feet bgs. TCE levels exceed Illinois Environmental Protection Agency's (IEPA) Tiered Approach to Corrective Action Objectives (TACO) Soil Remediation Objectives (SROs) for Ingestion (58 mg/kg) and Inhalation (5 mg/kg), and the Soil Component of the Groundwater Ingestion Exposure Route Value (0.06 mg/kg). Tetrachloroethene levels exceed IEPA TACO SROs for Ingestion (12 mg/kg) and Inhalation (11 mg/kg), and the Soil Component of the Groundwater Ingestion Exposure Route Value (0.06 mg/kg). Lead exceeds IEPA SROs for Ingestion (400 mg/kg). Based on these exceedances of IEPA TACO a removal action is warranted.